

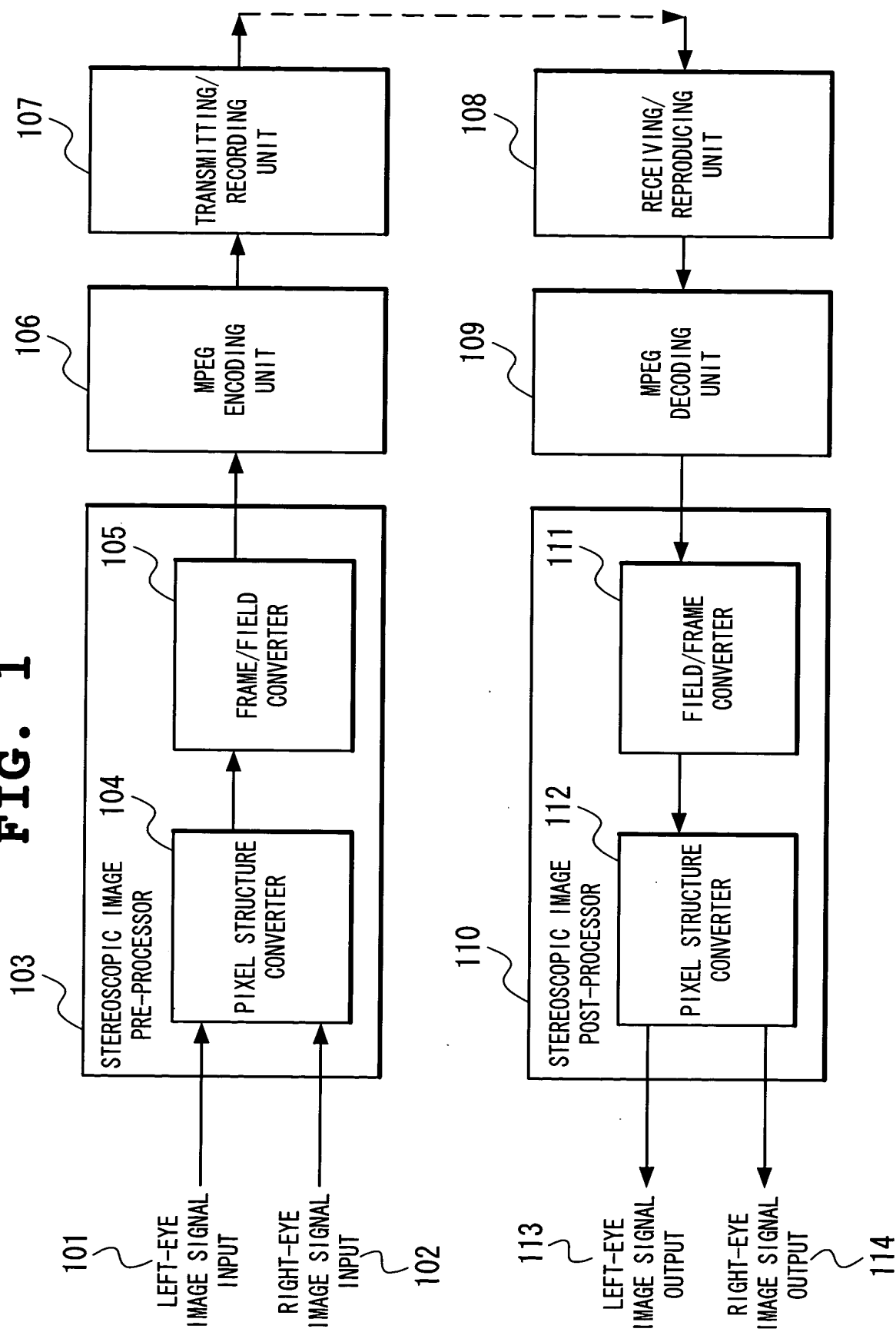
FIG. 1

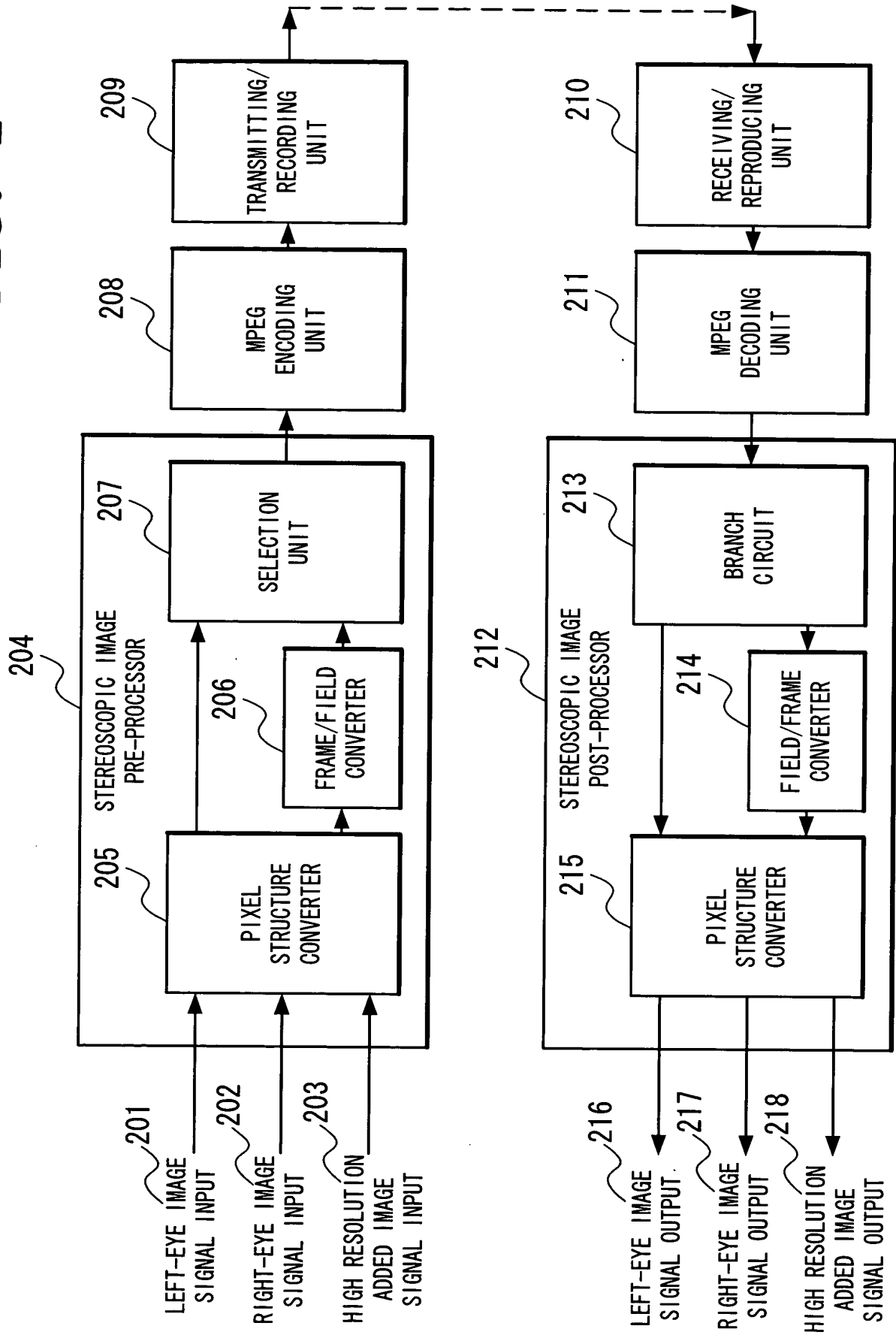
FIG. 2

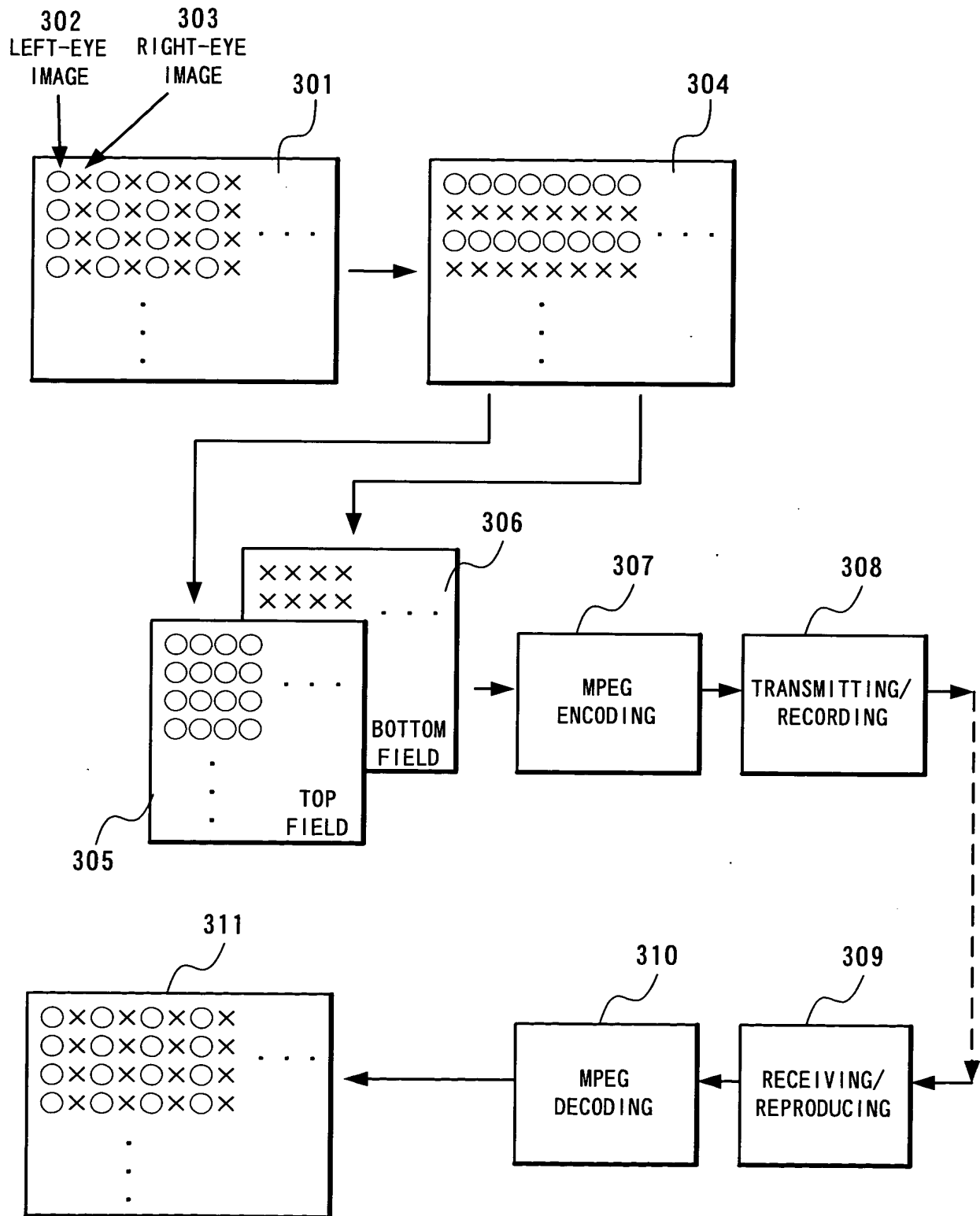
FIG 3

FIG. 4

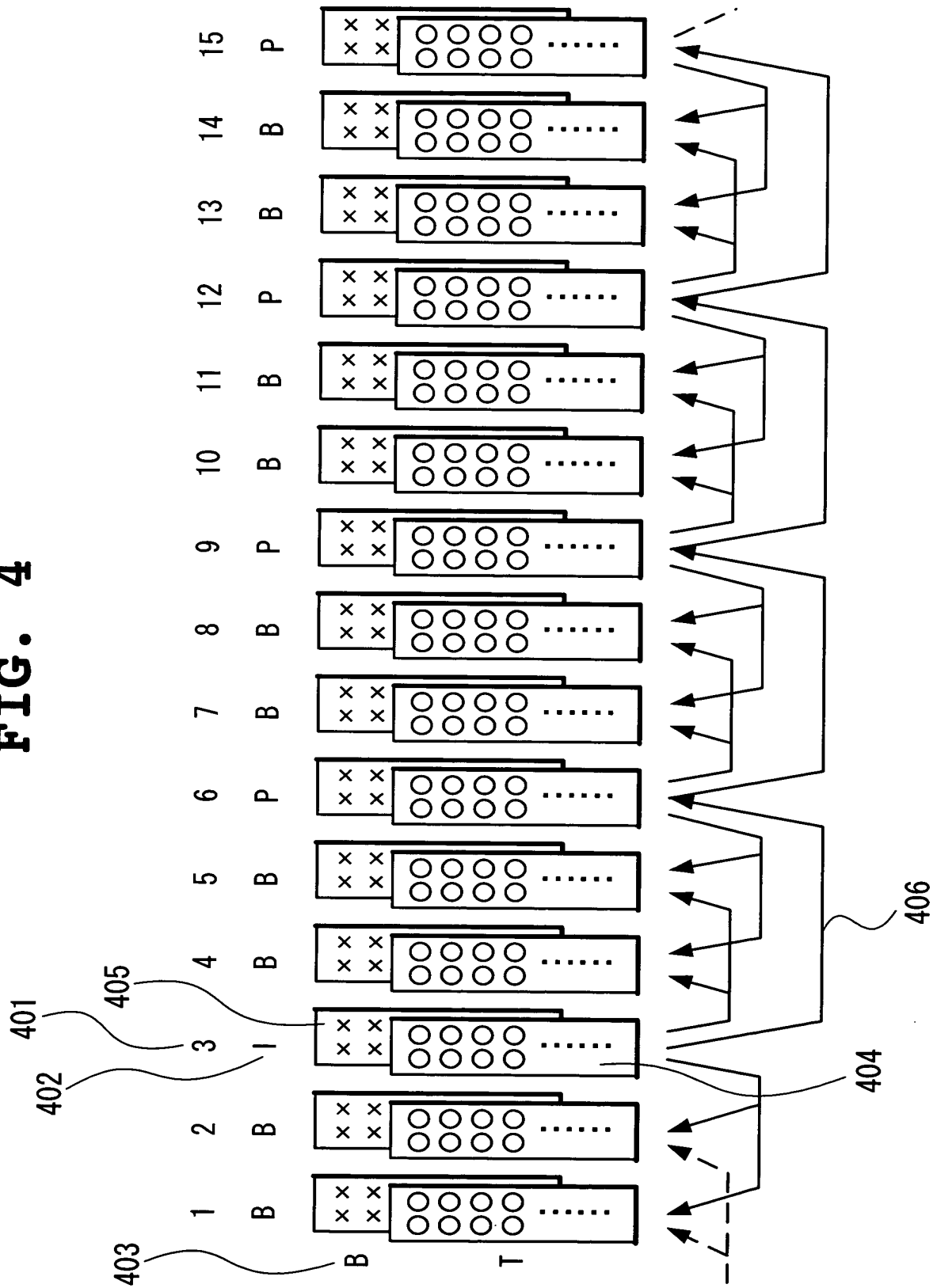


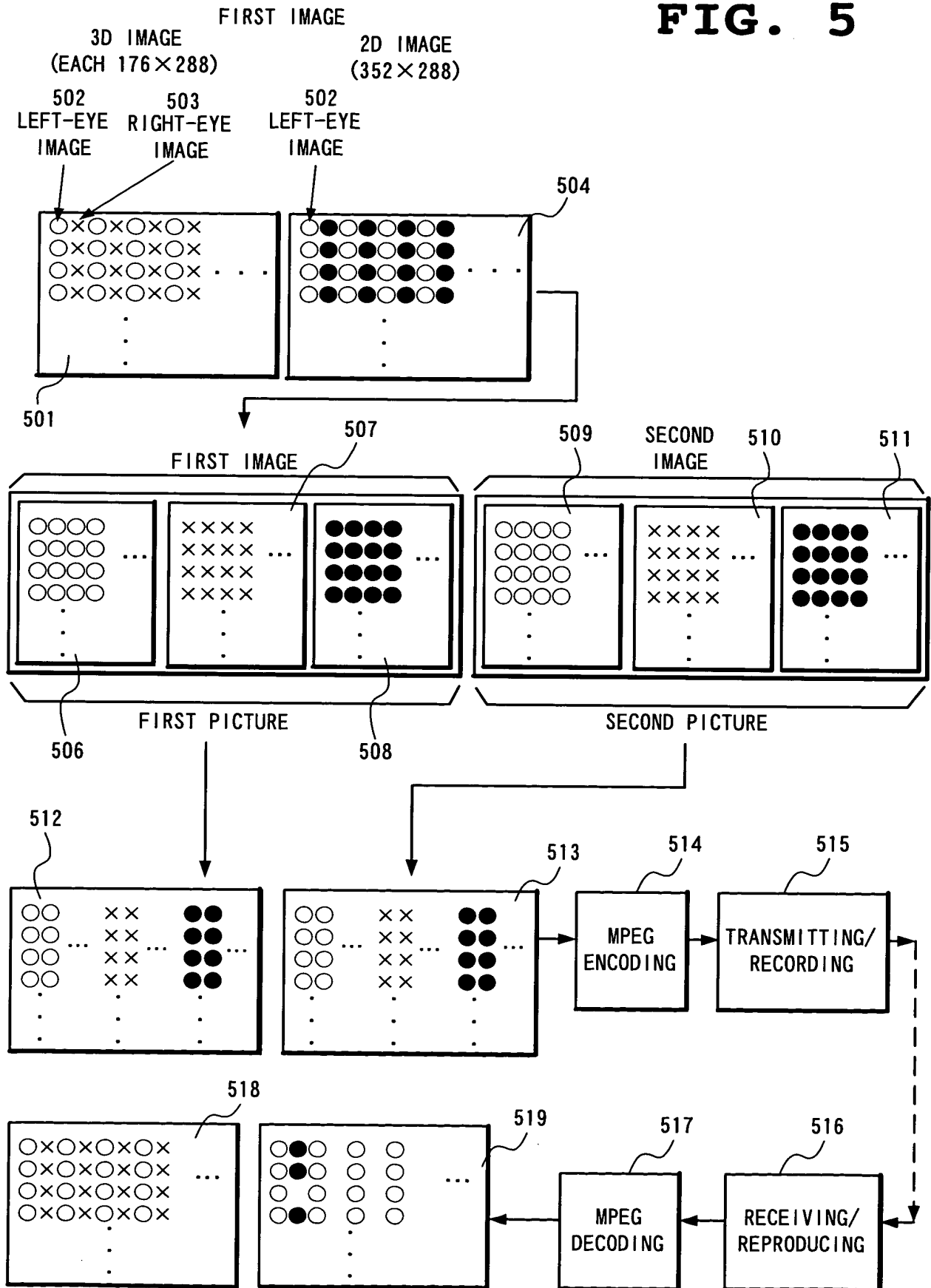
FIG. 5

Figure 1 is a schematic diagram of a 15-stage pipeline. The stages are numbered 1 to 15. Each stage contains a set of four circles (two open, two filled) and a set of four 'x' marks. The stages are labeled B, B, I, B, B, P, B, B, B, P, B, B, B, B, P. A dashed line separates the first two stages from the rest. A solid line separates the last two stages from the rest. A bracket labeled 602 groups the first two stages. A bracket labeled 601 groups the stages from 3 to 14. A bracket labeled 603 groups the stages from 1 to 14. A bracket labeled 604 groups the stages from 3 to 15. Arrows indicate data flow between stages.

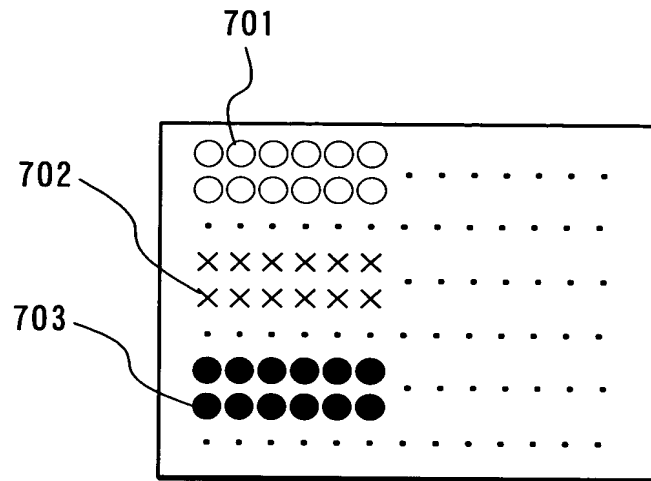
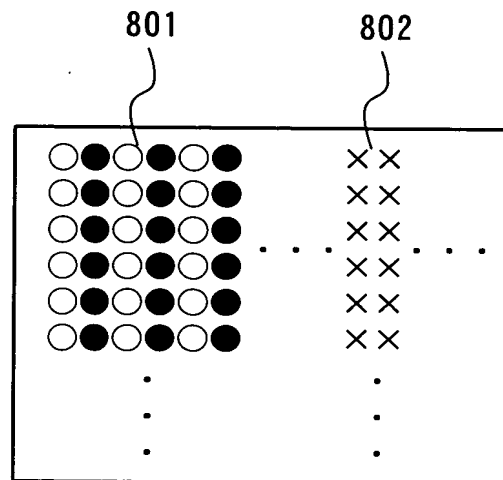
FIG. 7**FIG. 8**

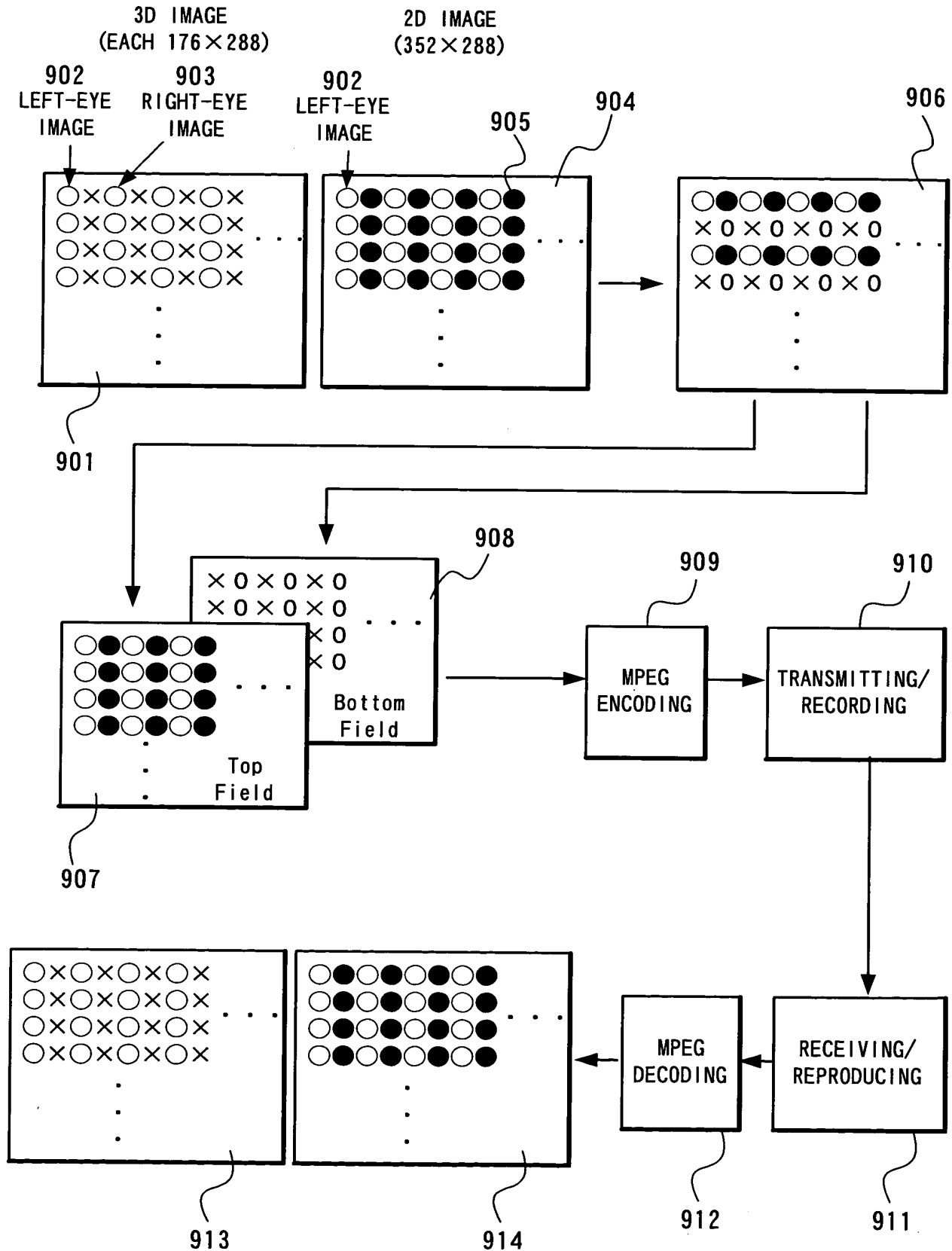
FIG. 9

FIG 10

X00	<u>0</u>	X01	<u>0</u>	X02	<u>0</u>	X03	<u>0</u>
X10	<u>0</u>	X11	<u>0</u>	X12	<u>0</u>	X13	<u>0</u>
X20	<u>0</u>	X21	<u>0</u>	X22	<u>0</u>	X23	<u>0</u>
X30	<u>0</u>	X31	<u>0</u>	X32	<u>0</u>	X33	<u>0</u>
X40	<u>0</u>	X41	<u>0</u>	X42	<u>0</u>	X43	<u>0</u>
X50	<u>0</u>	X51	<u>0</u>	X52	<u>0</u>	X53	<u>0</u>
X60	<u>0</u>	X61	<u>0</u>	X62	<u>0</u>	X63	<u>0</u>
X70	<u>0</u>	X71	<u>0</u>	X72	<u>0</u>	X73	<u>0</u>

1001

FIG. 11

X00	<u>X00</u>	X01	<u>X01</u>	X02	<u>X02</u>	X03	<u>X03</u>
X10	<u>X10</u>	X11	<u>X11</u>	X12	<u>X12</u>	X13	<u>X13</u>
X20	<u>X20</u>	X21	<u>X21</u>	X22	<u>X22</u>	X23	<u>X23</u>
X30	<u>X30</u>	X31	<u>X31</u>	X32	<u>X32</u>	X33	<u>X33</u>
X40	<u>X40</u>	X41	<u>X41</u>	X42	<u>X42</u>	X43	<u>X43</u>
X50	<u>X50</u>	X51	<u>X51</u>	X52	<u>X52</u>	X53	<u>X53</u>
X60	<u>X60</u>	X61	<u>X61</u>	X62	<u>X62</u>	X63	<u>X63</u>
X70	<u>X70</u>	X71	<u>X71</u>	X72	<u>X72</u>	X73	<u>X73</u>

1101

FIG. 12

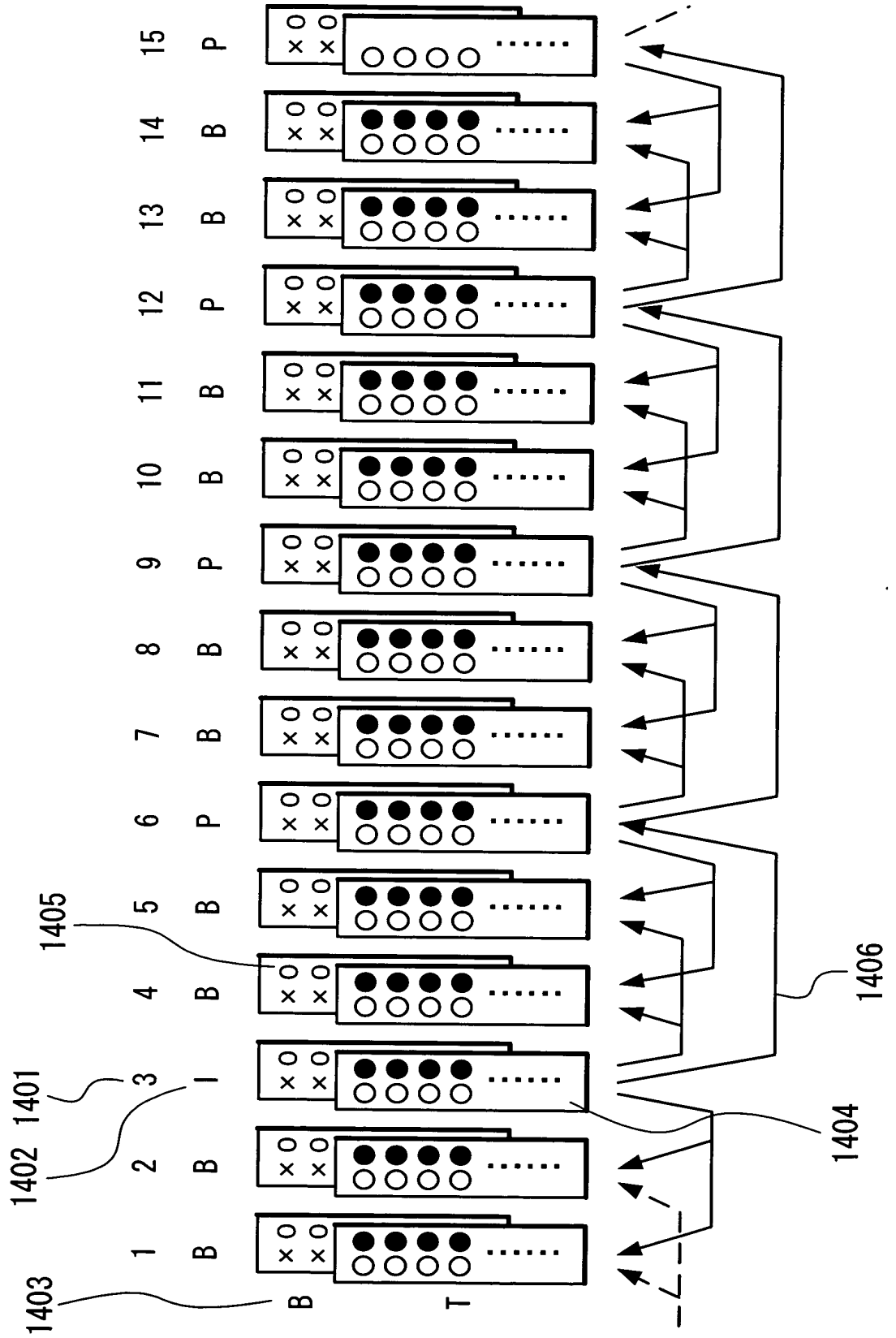
X00	<u>(X00+X01)/2</u>	X01	<u>(X01+X02)/2</u>	X02	<u>(X02+X03)/2</u>	X03	<u>0</u>
X10	<u>(X10+X11)/2</u>	X11	<u>(X11+X12)/2</u>	X12	<u>(X12+X13)/2</u>	X13	<u>0</u>
X20	<u>(X20+X21)/2</u>	X21	<u>(X21+X22)/2</u>	X22	<u>(X22+X23)/2</u>	X23	<u>0</u>
X30	<u>(X30+X31)/2</u>	X31	<u>(X31+X32)/2</u>	X32	<u>(X32+X33)/2</u>	X33	<u>0</u>
X40	<u>(X40+X41)/2</u>	X41	<u>(X41+X42)/2</u>	X42	<u>(X42+X43)/2</u>	X43	<u>0</u>
X50	<u>(X50+X51)/2</u>	X51	<u>(X51+X52)/2</u>	X52	<u>(X52+X53)/2</u>	X53	<u>0</u>
X60	<u>(X60+X61)/2</u>	X61	<u>(X61+X62)/2</u>	X62	<u>(X62+X63)/2</u>	X63	<u>0</u>
X70	<u>(X70+X71)/2</u>	X71	<u>(X71+X72)/2</u>	X72	<u>(X72+X73)/2</u>	X73	<u>0</u>

1202

FIG. 13

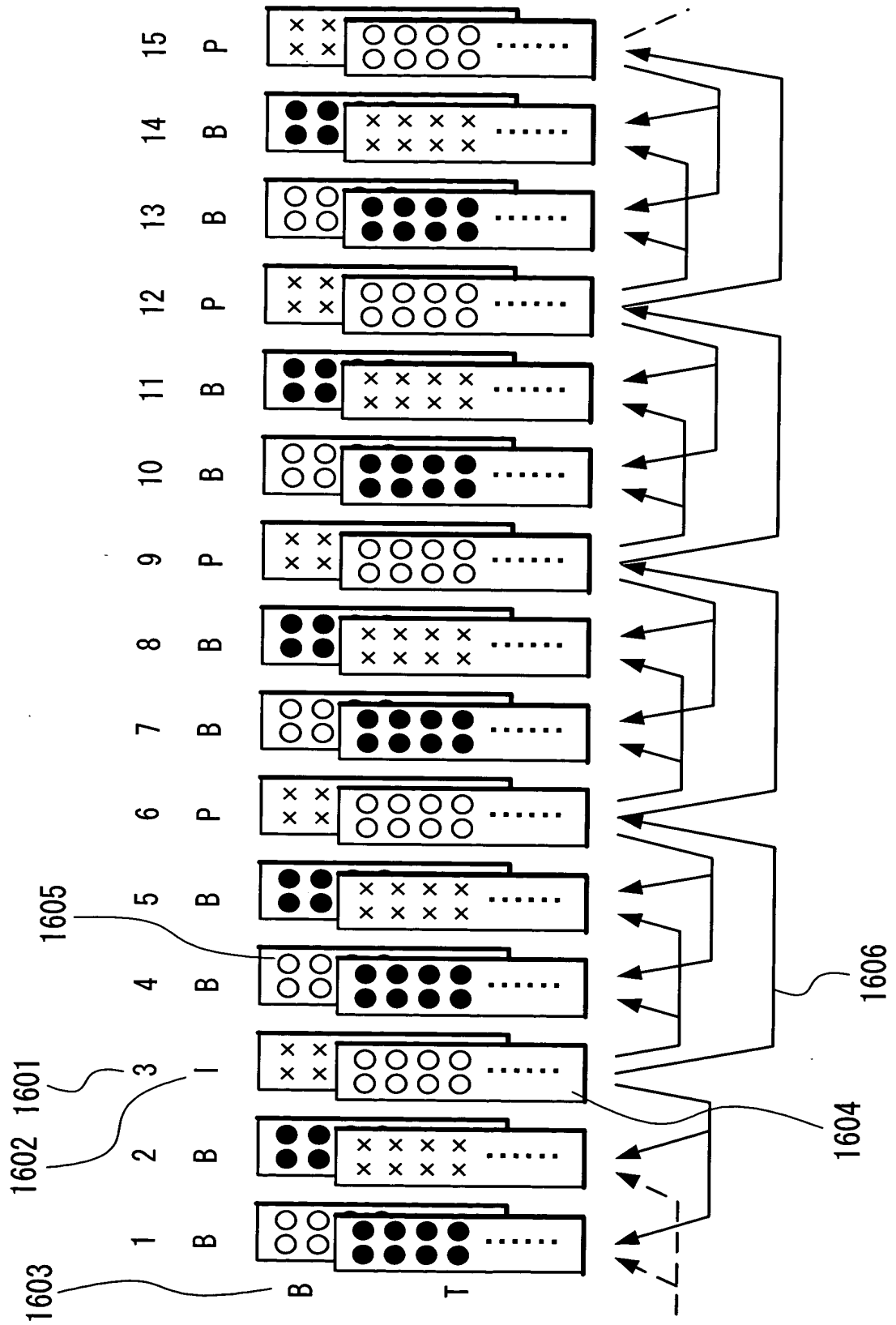
X00	$\frac{(X00+X01)}{2}$	X01	$\frac{(X01+X02)}{2}$	X02	$\frac{(X02+X03)}{2}$	X03	<u>X03</u>	1302
X10	$\frac{(X10+X11)}{2}$	X11	$\frac{(X11+X12)}{2}$	X12	$\frac{(X12+X13)}{2}$	X13	<u>X13</u>	
X20	$\frac{(X20+X21)}{2}$	X21	$\frac{(X21+X22)}{2}$	X22	$\frac{(X22+X23)}{2}$	X23	<u>X23</u>	
X30	$\frac{(X30+X31)}{2}$	X31	$\frac{(X31+X32)}{2}$	X32	$\frac{(X32+X33)}{2}$	X33	<u>X33</u>	
X40	$\frac{(X40+X41)}{2}$	X41	$\frac{(X41+X42)}{2}$	X42	$\frac{(X42+X43)}{2}$	X43	<u>X43</u>	
X50	$\frac{(X50+X51)}{2}$	X51	$\frac{(X51+X52)}{2}$	X52	$\frac{(X52+X53)}{2}$	X53	<u>X53</u>	
X60	$\frac{(X60+X61)}{2}$	X61	$\frac{(X61+X62)}{2}$	X62	$\frac{(X62+X63)}{2}$	X63	<u>X63</u>	
X70	$\frac{(X70+X71)}{2}$	X71	$\frac{(X71+X72)}{2}$	X72	$\frac{(X72+X73)}{2}$	X73	<u>X73</u>	

FIG. 14



[illegible]

FIG. 16



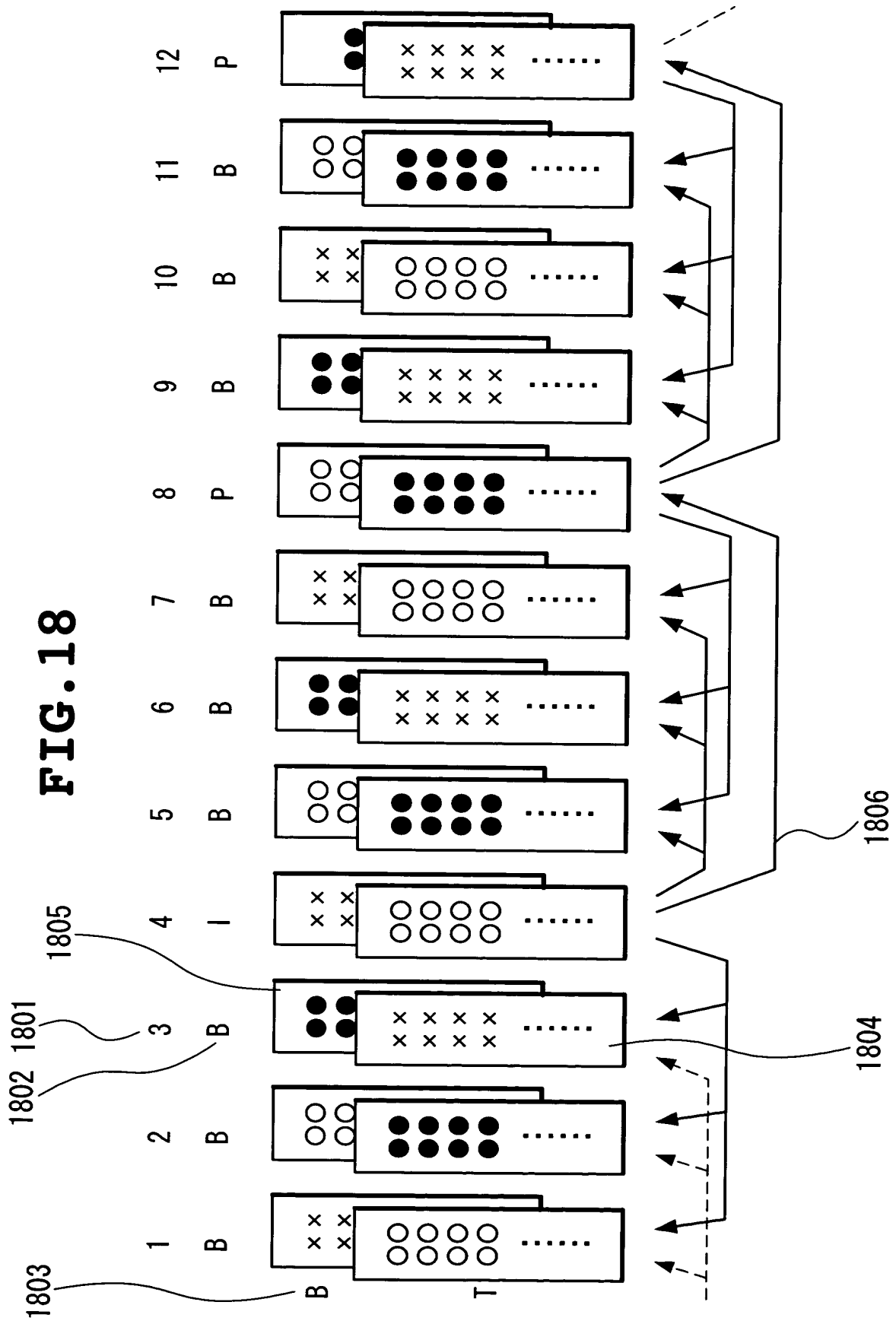


FIG. 19

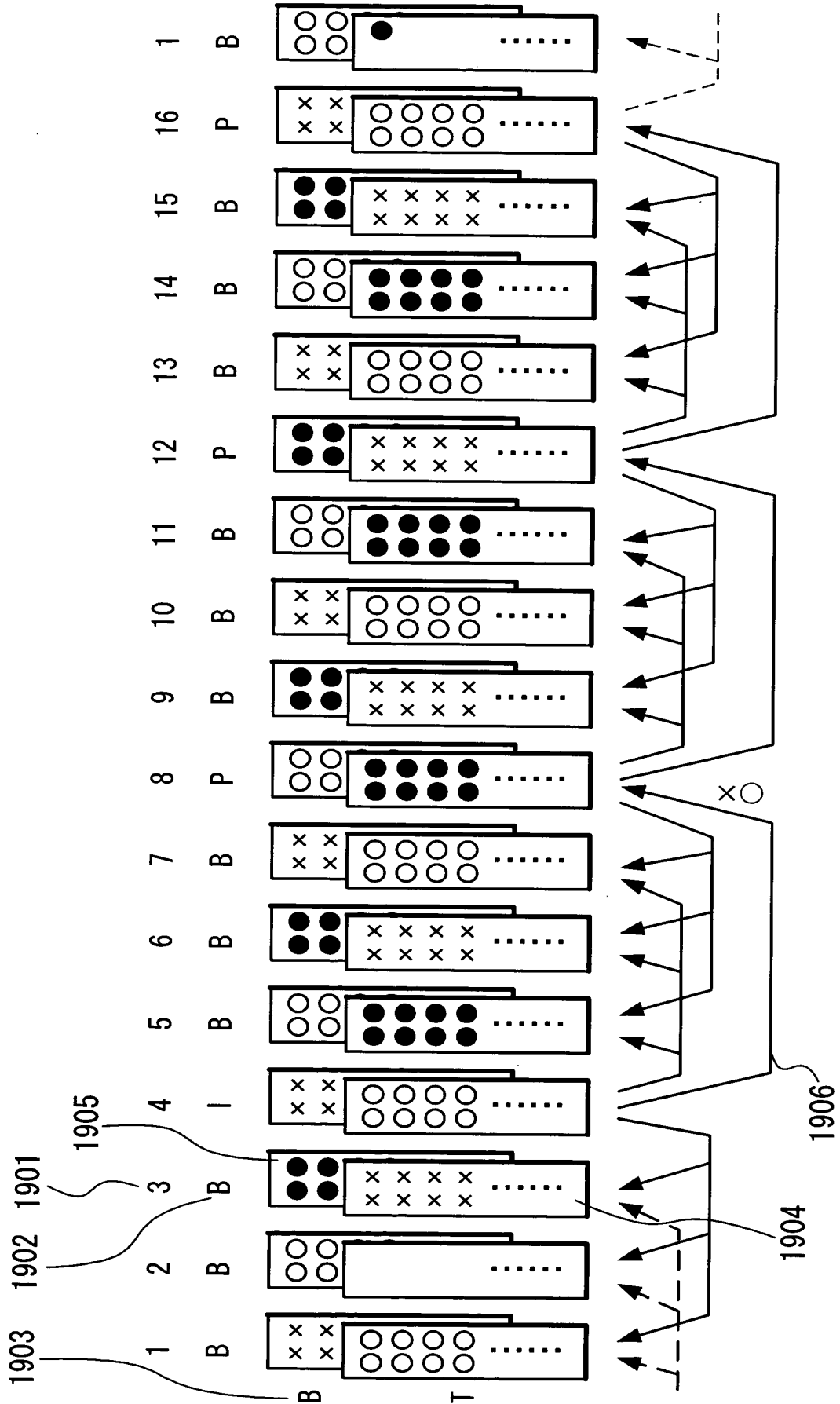


FIG. 20 (PRIOR ART)